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(54) Cue ball aiming methods and apparatus

(57) In order to assist the aiming of a cue ball 33 in striking an object ball 30 so that the object ball will move along a required path to a pocket 31 when playing a table-top ball game such as snooker, a beam 34 of light is projected from a housing 10 on to the object ball 30 such that the path of projection passes centrally through the object ball 30 and centrally through the mouth of the pocket 31. The cue ball 33 is then aimed at the light spot on the object ball 30: provided actual contact takes place at the light spot, the object ball will roll towards the pocket 31. Mounted within the housing 10 is a battery power source, a bulb and reflector, adjustable with respect to a lens 13 in the end face of the housing so that a self contained unit is provided which can be positioned at any desired place on a snooker or billiards table.

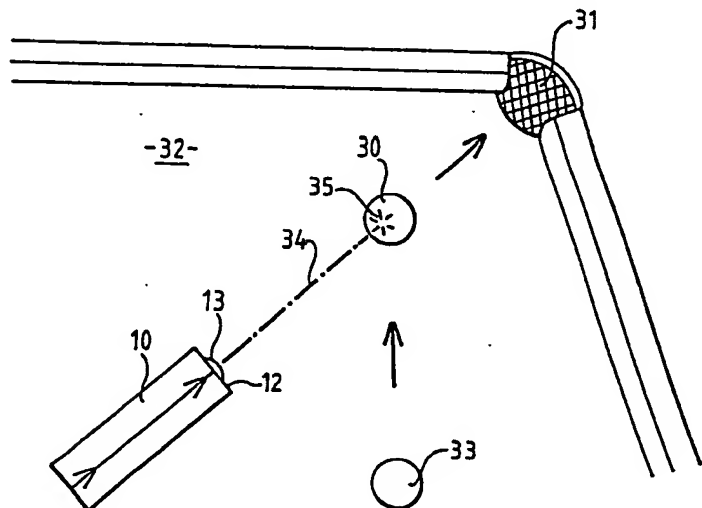
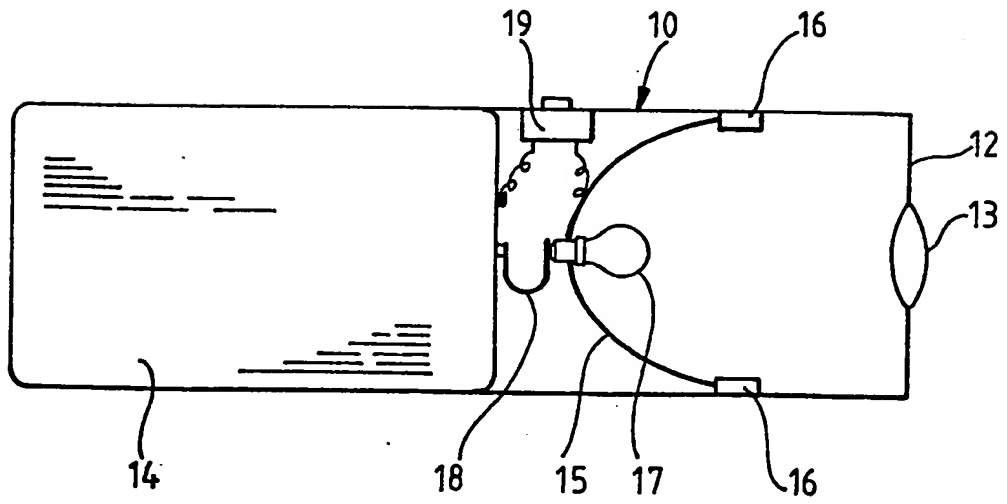
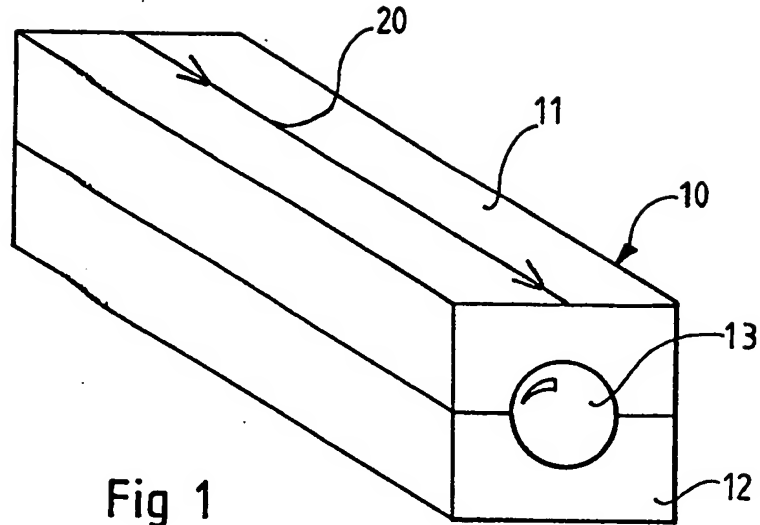


Fig 3

2.0. Original

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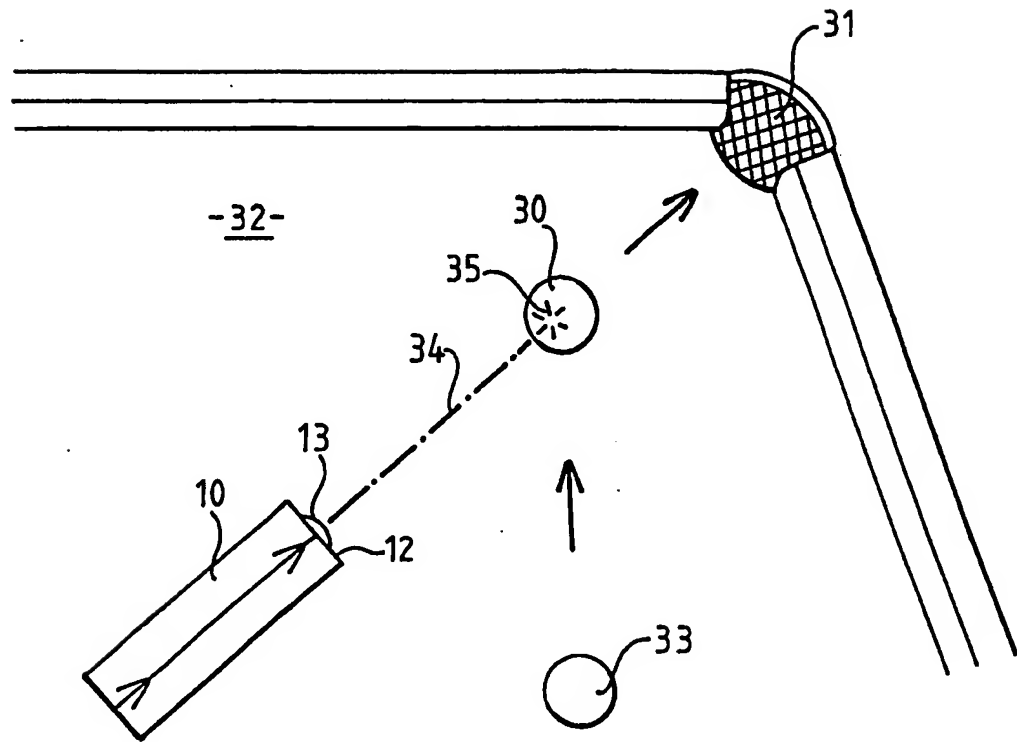


Fig 3

SPECIFICATION

Cue ball aiming methods and apparatus

5 This invention relates to a method of and apparatus for assisting the aiming of a cue ball, when playing a table-top ball game such as billiards or snooker.

In many table-top ball games such as billiards or snooker, a cue is used to strike a first ball (the cue ball) to cause that cue ball to move in a desired direction and strike a second ball (the object ball) with the intention of causing the object ball to move along a desired path—for example, leading to a pocket into which the object ball is to fall. In order to make the object ball move in a particular direction, the point on the surface of the object ball which the cue ball must strike is absolutely critical: it takes considerable skill and experience before a player is able to select the correct point on the object ball surface to ensure that the object ball will move in the required direction. Of course, even though the correct point may have been selected, it still takes most considerable skill to ensure that the cue ball actually does strike the selected point on the object ball surface.

25 Relatively inexperienced people when attempting to play such ball games often have very great difficulty in getting the object ball to move in a desired direction, following the striking of that object ball by the cue ball, on account of the two separate problem areas mentioned above—that is, firstly selecting the correct point on the object ball surface and secondly striking the cue ball so as to move along the required path actually to strike the selected point on the object ball. It is a principal object of the present invention to provide both a method of and apparatus for assisting the determination of the correct point on the object ball surface for striking by the cue ball to cause the object ball to move in a required direction, so that a player may direct most of his concentration on just the second problem, of causing the cue ball to move along the required path to strike the object ball at the correct point on its surface.

Accordingly, one aspect of the present invention provides a method of assisting the aiming of a cue ball when playing a table-top ball game so as to cause an object ball to move along a desired path when struck by the cue ball, in which method a relatively narrow beam of light is projected on to the surface of the object ball in the direction of the desired path of movement of the object ball, which beam is projected to pass substantially centrally through the object ball so as to produce a light spot on the surface of the object ball, and then the cue ball is aimed to strike the light spot on the object ball.

55 When performing the method of this invention, having first arranged for the projection of the light beam in the desired direction, a player merely has to aim his cue ball so as to strike the point of the object ball surface where the player can see a light spot; the player need not therefore concentrate on an imaginary point on the object ball surface, and so may apply his entire concentration on having the cue ball strike the illuminated point on the object ball surface, with the knowledge that if he is successful in striking that illuminated point, the object ball will move in the

required direction. Moreover, if the player is successful at striking the correct point and then seeing the object ball move in the required direction, the player will more rapidly learn the technique of correctly striking the object ball to cause it to move in a required direction than he would if most of his attempts at this resulted in failure.

It is preferred for the light beam to be an essentially parallel pencil, so that the size of the light spot falling on the object ball will always be the same, irrespective of the distance between the light projector and the object ball itself. Moreover, the beam advantageously is projected parallel to the table-top with the beam axis spaced from the table-top by one half of the diameter of the object ball. In this way, the light spot will be produced on the object ball at the same level as will be the point of contact between the cue ball and the object ball, again irrespective of the distance between the light projector and the object ball itself.

Whilst the method may most advantageously be used to assist the aiming of a cue ball to have an object ball more towards and into a pocket disposed on the table edge, by having the path of propagation of the light beam extending substantially centrally through both the object ball and the pocket mouth, nevertheless the method may be employed to assist the placement of the object ball at any desired point on the table. Of course, whether the object ball ends up at the required point, following the collision of the cue ball with the object ball, will depend upon the energy imparted to the object ball, so governing how far the object ball travels—but again, the method of this invention will assist a player in learning how hard the cue ball must be struck, in order to achieve a desired length of roll of the object ball.

According to a second aspect of the present invention, there is provided apparatus for performing the method of this invention as described above, which apparatus comprises a housing in which is mounted a light source and a lens arranged to produce a relatively narrow beam of light, and sighting means associated with the housing and aligned with the direction of projection of the light beam, so as to assist the positioning of the housing to ensure the light beam is projected in a desired direction.

Most preferably, the housing is elongate in the direction of projection of the light beam, and has a relatively small vertical extent (typically of the order of the diameter of a ball on the table) so as to assist the sighting of the beam of light projected from the housing. For example, the housing may be of substantially triangular or vertical cross-sectional shape and may be arranged so that the light beam leaves the housing through a vertical end face.

It is preferred for the apparatus to be wholly self-contained, and so to have a power source therein as well as a light bulb and a lens. Conveniently, the power source comprises either dry cells or a rechargeable battery. The light source may include a suitable low voltage bulb and associated reflector to direct light to the lens, and preferably the light source and lens are mutually adjustable as appropriate, to enable focussing of the light beam emanating from the housing so as to form a narrow pencil

of light.

The optical axis of the apparatus should be at a height above the housing base approximately equal to one half of the diameter of a ball with which the apparatus is to be used, so that a light beam projected along that optical axis on to a ball will fall on the horizontal mid plane of that ball.

The sighting means may take any convenient form, allowing the housing suitably to be aligned with the required path of movement on an object ball to be struck by a cue ball. For example, the sighting means may comprise a reference line suitably marked on the upper surface of the housing of the apparatus, or a more complex arrangement may be employed, for example corresponding to a simple form of gun sight. In the latter case, the sighting means could comprise an upstanding projection at one end of the housing and an upstanding plate at the other end of the housing, the plate having a V-shaped notch therein for alignment with the projection, or an aperture again for alignment with the projection and through which a player could view the projection, the object ball and – for example – a pocket into which the object ball is to be directed.

By way of example only, one specific embodiment of this invention will now be described in detail, reference being made to the accompanying drawings, in which:-

Figure 1 shows in perspective light beam projecting apparatus according to the invention;

Figure 2 is a plan view on the apparatus of *Figure 1*, but with the lid removed from the housing; and

Figure 3 is a diagrammatic view of a method of employment of the apparatus described with reference to *Figures 1* and *2*.

Referring initially to *Figures 1* and *2*, it can be seen that apparatus constructed in accordance with this invention comprises a substantially rectangular housing 10 of elongate shape, the housing having a detachable lid 11. Mounted within end face 12 of the housing 10 is a lens 13, and provided within the housing but at the opposite end to the lens 13 is a battery box 14 (*Figure 2*). A reflector 15 is held by a carrier 16 itself slidably mounted within the housing 10, for movement towards and away from the lens 13. Centrally disposed within the reflector 15 is a low-voltage bulb 17.

An electrical spring contact 18 projects from the battery box 14 and makes contact with the end stud of the bulb 17. A switch 19, fitted so as to project through a suitable aperture in the housing 10, is connected in series between the side contact of the bulb 17 and the battery in box 14, so that the bulb 17 may be switched on and off, at will.

Marked on the upper surface of the lid 11 is a sighting arrow 20, pointing in the direction of projection of a light beam from the housing 10. Adjustment of the carrier 16 within the housing 10 allows the beam projected from the lens 13 to be adjusted, so as to have a substantially parallel, or slightly convergent, form.

In order to use the apparatus described above to assist the aiming of a cue ball when playing a game of snooker, the housing of the apparatus is placed on a snooker table and then the box is positioned so that

the sighting arrow 20 points at the centre of an object ball, in the direction in which the object ball is to move. As shown in *Figure 3*, if object ball 30 is to be knocked into corner pocket 31 of the snooker table 32 by striking the object ball 30 with a cue ball 33, the housing 10 is positioned so that the path of the light beam 34 projected from lens 13 extends centrally through the object ball and centrally through the mouth of the pocket 31. With the housing 10 thus aligned, switch 19 is operated to illuminate the bulb 17, and so to cause a light spot 35 to fall on the object ball 30. The cue ball 33 is then aimed to strike the object ball 30 so that the actual point of contact between the two balls is at the light spot 35. Provided that the cue ball 33 is accurately directed on to the object ball, the object ball will then move along the path coincident with the path of projection of the beam 34, and so will move towards the pocket 31. The object ball will of course be pocketed, provided that sufficient energy was imparted to the object ball by the cue ball, so giving the object ball sufficient rolling momentum to reach the pocket.

CLAIMS

1. A method of assisting the aiming of a cue ball when playing a table-top ball game so as to cause an object ball to move along a desired path when struck by the cue ball, in which method a relatively narrow beam of light is projected on to the surface of the object ball in the direction of the desired path of movement of the object ball, which beam is projected to pass substantially centrally through the object ball so as to produce a light spot on the surface of the object ball, and then the cue ball is aimed to strike the light spot on the object ball.

2. A method according to claim 1, in which the projected light beam is an essentially parallel pencil.

3. A method according to claim 1 or claim 2, in which the light is projected with its axis substantially parallel to the table-top, the beam axis being spaced from the table-top by one half of the diameter of the object ball.

4. A method of assisting the aiming of a cue ball when playing a table-top ball game, substantially as hereinbefore described with reference to *Figure 3* of the accompanying drawings.

5. Apparatus for performing a method according to any of claims 1 to 4, which apparatus comprises a housing in which is mounted a light source and a lens arranged to produce a relatively narrow beam of light, and sighting means associated with the housing and aligned with the direction of projection of the light beam, so as to assist the positioning of the housing to ensure the light beam is projected in a desired direction.

6. Apparatus according to claim 5, wherein the housing is elongate in the direction of projection of the light beam, and has a vertical extent substantially equal to the diameter of a ball on the table, so as to assist the sighting of the beam of light projected from the housing.

7. Apparatus according to claim 5 or claim 6, wherein the housing is of substantially square or triangular vertical cross-sectional shape, arranged so

that the light beam leaves the housing through a generally vertical end face.

8. Apparatus according to any of claims 5 to 7, wherein the apparatus is wholly self-contained, and
5 has a power source within the housing as well as a light bulb and a lens.

9. Apparatus according to claim 8, wherein the power source comprises either dry cells or a rechargeable battery.

- 10 10. Apparatus according to any of claims 5 to 9 wherein the light source and lens are mutually adjustable as appropriate, to enable focussing of the light beam emanating from the housing so as to form a narrow pencil of light.

- 15 11. Apparatus according to any of claims 5 to 10, wherein the optical axis of the apparatus is at a height above the housing base approximately equal to one half of the diameter of a ball with which the apparatus is to be used.

- 20 12. Apparatus according to any of claims 5 to 11, wherein the sighting means comprises a reference line suitably marked on an upper surface of the housing of the apparatus.

- 25 13. Apparatus according to any of claims 5 to 11, wherein the sighting means comprises an upstanding projection at one end of the housing and an upstanding plate at the other end of the housing, the plate having a notch or aperture therein for alignment with the projection.

- 30 14. Apparatus for performing a method according to any of claims 1 to 4 and substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.